

WHAT IS CLAIMED IS:

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1. An overlay image processing device for generating an overlay image signal composed of an  $n$  number of superimposed image signals,  $n$  being an integer greater than 1, the overlay image processing device comprising:

5 an image selector configured to select from among an  $m$  number of image signals one reference image signal and  $(n-1)$  number of superimposing image signals,  $m$  being an integer greater than 2;

10 a resolution converter configured to convert resolutions of the  $n$  number of selected image signals including the reference image signal and the  $(n-1)$  number of superimposing image signals into respective desired resolutions; and

15 an image synthesizer configured to superimpose the  $(n-1)$  number of converted superimposing image signals on the converted reference signal.

20 2. An overlay image processing device according to claim 1 wherein at least one of the  $m$  number of image signals is a display signal output from a personal computer.

25 3. An overlay image processing device according to claim 1 wherein the image selector selects the reference image signal and the  $(n-1)$  number of superimposing image signals according to an arbitrary predetermined order of superposition for the  $n$  number of image signals; and

the image synthesizer superimposes the  $(n-1)$  number of converted superimposing image signals on the converted reference image signal according to the order of superposition.

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30 4. An overlay image processing device according to claim 1 further comprising a scan converter that, in the event that at least one of the  $n$

number of image signals selected by the image selector is an interlaced image signal, converts the at least one interlaced image signal into a non-interlaced image signal.

5        5. An overlay image processing device according to claim 1 wherein the image synthesizer has the  $n$  number of 2-input image synthesizers, each 2-input image synthesizer being configured to receive upper-side and lower-side image signals and superimpose the upper-side image signal on the lower-side image signal;

10        the  $n$  number of 2-input image synthesizers being connected in series in multistage fashion such that the 2-input image synthesizer of a first stage uses the reference image signal as the lower-side image signal and a first superimposing image signal as the upper-side image signal, while the 2-input image synthesizer of  $i^{\text{th}}$  stage, where  $i$  is between 2 and  $n$ , inclusive, uses an output of the 2-input image synthesizer of  $(i-1)^{\text{th}}$  stage as the lower-side image signal and  $i^{\text{th}}$  superimposing image signal as the upper-side image signal.

15        6. An overlay image display device for displaying an overlay image composed of an  $n$  number of superimposed images,  $n$  being an integer greater than 1, the overlay image display device comprising:

20        an overlay image processing device for generating an overlay image signal composed of the  $n$  number of superimposed image signals; and

25        an image display device for displaying an image represented by the overlay image signal;

the overlay image processing device includes:

an image selector configured to select from among an  $m$  number of image signals one reference image signal and  $(n-1)$  number of superimposing image signals,  $m$  being an integer greater than 2;

30        a resolution converter configured to convert resolutions of the

• *n* number of selected image signals including the reference image signal and the (*n*-1) number of superimposing image signals into respective desired resolutions; and

5 an image synthesizer configured to superimpose the (*n*-1) number of converted superimposing image signals on the converted reference signal.

7. An overlay image display device according to claim 6 wherein at least one of the *m* number of image signals is a display signal output from a 10 personal computer.

8 An overlay image display device according to claim 6 wherein the image selector selects the reference image signal and the (*n*-1) number of superimposing image signals according to an arbitrary predetermined order 15 of superposition for the *n* number of image signals; and

the image synthesizer superimposes the (*n*-1) number of converted superimposing image signals on the converted reference image signal according to the order of superposition.

20 9. An overlay image display device according to claim 6 further comprising a scan converter that, in the event that at least one of the *n* number of image signals selected by the image selector is an interlaced image signal, converts the at least one interlaced image signal into a non-interlaced image signal.

25 10. An overlay image display device according to claim 6 wherein the image synthesizer has the *n* number of 2-input image synthesizers, each 2-input image synthesizer being configured to receives upper-side and lower-side image signals and superimpose the upper-side image signal on 30 the lower-side image signal;

the  $n$  number of 2-input image synthesizers being connected in series in multistage fashion such that the 2-input image synthesizer of a first stage uses the reference image signal as the lower-side image signal and a first superimposing image signal as the upper-side image signal, while the 2-input image synthesizer of  $i^{\text{th}}$  stage, where  $i$  is between 2 and  $n$ , inclusive, uses an output of the 2-input image synthesizer of  $(i-1)^{\text{th}}$  stage as the lower-side image signal and  $i^{\text{th}}$  superimposing image signal as the upper-side image signal.

10 11. A method of generating an overlay image signal composed of an  $n$  number of superimposed image signals,  $n$  being an integer greater than 1, the method comprising the steps of:

15 (a) selecting from among an  $m$  number of image signals one reference image signal and  $(n-1)$  number of superimposing image signals,  $m$  being an integer greater than 2;

(b) converting resolutions of the  $n$  number of selected image signals including the reference image signal and the  $(n-1)$  number of superimposing image signals into respective desired resolutions; and

20 (c) superimposing the  $(n-1)$  number of converted superimposing image signals on the converted reference signal.

12. A method according to claim 11 wherein at least one of the  $m$  number of image signals is a display signal output from a personal computer.

25 13. A method according to claim 11 wherein the step (a) includes the step of selecting the reference image signal and the  $(n-1)$  number of superimposing image signals according to an arbitrary predetermined order of superposition for the  $n$  number of image signals; and

30 the step (c) includes the step of superimposing the  $(n-1)$  number of converted superimposing image signals on the converted reference image

• signal according to the order of superposition.

14. A method according to claim 11 further comprising a step of, in the event that at least one of the  $n$  number of image signals selected by the 5 image selector is an interlaced image signal, converting the at least one interlaced image signal into a non-interlaced image signal.

10 15. A method according to claim 11 wherein the step (c) includes the  $n$  number of 2-input image synthesizing steps, each 2-input image synthesizing step including receiving upper-side and lower-side image signals and superimposing the upper-side image signal on the lower-side image signal;

15 20 the  $n$  number of 2-input image synthesizing steps being performed in series in multistage fashion such that the 2-input image synthesizing step of a first stage uses the reference image signal as the lower-side image signal and a first superimposing image signal as the upper-side image signal, while the 2-input image synthesizing step of  $i^{\text{th}}$  stage, where  $i$  is between 2 and  $n$ , inclusive, uses an output of the 2-input image synthesizing step of  $(i-1)^{\text{th}}$  stage as the lower-side image signal and  $i^{\text{th}}$  superimposing image signal as the upper-side image signal.

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